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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/808,374

03/25/2004

Yi Yeol Lyu

6661-000041/US

4754

30593

7590

07/14/2009

HARNESS, DICKEY & PIERCE, P.L.C.

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EXAMINER

ZEMEL, IRINA SOPHIA

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

07/14/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/808,374

**Applicant(s)**

LYU ET AL.

**Examiner**

Irina S. Zemel

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 11, 13 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11, 13 and 22-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date 5/21/09
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

It is noted that the amendments to the claims submitted by the applicants on 5-5-2009 fails to comply with the current Rules governing amendments. Specifically, some of the subject matter deleted from the claims, namely, the actual formulas of previously recited photacid generators are not "crossed-out" from the text of the claims as amended.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 23-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims recite the condensation catalyst generator limitation as "the condensation catalyst generator includes a photoacid generator and a photobase generator capable of generating an acid and base by light exposure or heating." (emphasis added). However, nowhere in the specification the two types of catalysts generators are disclosed as being used together. From the entire disclosure (including illustrative examples), it appears that the two types of generators, i.e., photoacid or photobase are mutually exclusive species, as they are always

disclosed, used in illustrated examples and claims as such. Nowhere in the specification the concept of using these two types of generators together is disclosed and it is not seen that the applicants were in possession of such concept at the time the instant application was filed. Therefore, the claimed limitation constitutes new matter not disclosed or supported by the originally filed application.

Although the enablement rejection is not issued at this time for claims 23-31, the question arises whether the claimed embodiments (compositions containing both types of catalyst generators) can be even used for intended use (forming porous films), since the claimed catalyst generators appears to be mutually exclusive species not capable of being used together. If one of the generator generates a base and another generates an acid, it appears that the catalyst generators when both present in the composition, may interfere with catalytic activity of each other and negate catalytic functions of each other.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-7, 11, 13 and 22-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,623,711 to Lyu et al., (hereinafter "Lyu") in combination with JP 2002-107932 to Toray Ind. Inc., (hereinafter "Toray").

As discussed in the previous office actions, Lui discloses all of the elements of the claimed composition with the exception of the specifically claimed condensation catalysts. Specifically, as stated in the previous office action, Lyu discloses

composition for forming a porous dielectric film, comprising: a siloxane-based resin precursor; a pore-generating material; and a solvent for dissolving the precursor and the porogen. See, for example, illustrative examples. The siloxane-based resin disclosed by Lyu fully correspond to the claimed resin, including resins obtained prepared by hydrolysis and polycondensation one cyclic siloxane based monomer of formula 1, column 2, lines 30-35, , and at least one silane-based monomer selected from the group consisting of compounds represented by Formulae 3 and 4 (column 5, line 6—column 6, line 23) of Lyu, using an acid such as hydrochloric acid, and water in an organic solvent. See also illustrative example 2, for general procedure, and specifically examples 1-4 and 1-5. The process conditions of claim 7 are met by illustrative examples of Lyu as well as the types and the amounts of solvents as per claims 12 and 14. See also disclosure in

As the porogen compound the reference expressly discloses heptakis(2,3,6-tri-O-methyl)-.beta.-cyclodextrin, which correspond to the formula of the claimed invention.

A porous dielectric film prepared the disclosed compositions is further disclosed in illustrative examples."

Lyu does not disclose a condensation catalyst generator in the compositions of his invention. However, addition of photoacid or photobase catalyst generator to the compositions of Lyu would have been obvious from the disclosure of Toray. Toray discloses that addition of catalyst generators (corresponding to the catalyst generators s generically claimed in the instant invention, and specifically claimed in claims 1 and 23

(see, specifically [0023-27] of Toray for photoacid generators and [0030-0033], for the photobase generators, specifically [0033]) to siloxane based resin precursor substantially identical to the siloxane precursors as disclosed and claimed in the instant specification results in compositions that can be quickly and efficiently cured by brief exposure to UV light. Therefore, addition of a catalyst generator (which is as photobase or photoacid generator disclosed by Toray to compositions of Lyu containing curable siloxane resin precursor substantially similar to the curable precursors disclosed in Toray, at least in the mechanism of condensation reaction) in the mounts corresponding to the claimed amounts (based on the precursor, see illustrative examples of Toray, disclosure [0034]) would have been obvious to achieve compositions that can be quickly and efficiently cured by exposure to UV light.

The Toray reference, similarly to the applicants disclosure, discloses use of photoacid generators and photobase generators in the alternative. However, to the extent that should the invention be operable using both types of catalysts generators, use of two different generators, i.e., a photobase and a photoacid generators (each of which fully correspond to the claimed respective generators as discussed above) in the compositions of Lui would have been obvious with reasonable expectation of adequate and cumulative results since each one is disclosed in Toray as a functional equivalent of the other usable for curing the same siloxane based compositions.

Comparative examples in the instant application are noted, however the results are considered to be unexpected as the compositions lacking photo catalyst generator

are expected to be incompletely cured at the conditions of the experiment, thus exhibiting inferior elasticity properties.

***Response to Arguments***

Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina S. Zemel whose telephone number is (571)272-0577. The examiner can normally be reached on Monday-Friday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571)272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Irina S. Zemel/  
Primary Examiner, Art Unit 1796

Irina S. Zemel  
Primary Examiner  
Art Unit 1796

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